

## CLAIMS

1. A transparent, polymerisable chemical composition comprising 10% to 60% of transparent hydroxylated acrylic resins, 10% to 70% of monomers selected from oligoethers and acrylate or methacrylate monomers, 0% to 90% of solvents and 0.1% to 10 % of photoinitiators which initiate the polymerisation procedure when stimulated by light radiation.
2. The composition according to claim 1, comprising 20% to 50% resin, 20% to 70% monomers, 5% to 50% solvents and 0.5% to 6% photoinitiators.
3. The composition according to claims 1 or 2, wherein said resins are selected from the group consisting of acrylic, polyester acrylate, urethane acrylate aromatic or aliphatic resins or mixtures thereof.
4. The composition according to any of the claims 1 to 3, wherein said resins have functionality comprised of between 1 to 6, preferably comprised of between 2 and 6.
5. The composition according to any of the claims 1 to 4, wherein said methacrylate monomers and oligoethers are selected from the group constituted by Isobornyl methacrylate (IBOMA), Tetraethyleneglycol dimethacrylate (TTEGDMA), whilst the acrylate oligoethers and monomers are selected from Isobornyl diacrylate (IBOA), 1,6 Hexanediol acrylate (HDDA), Trimethylolpropane triacrylate

(TMPTA), Tris(2-Hydroxyethyl)isocyanurate triacrylate (THEICTA), Tricyclodecane dimethanol diacrylate (TCDDMDA).

6. The composition according to claim 5, wherein said 5 monomers have functionality comprised of between 1 and 5.

7. The composition according to claims 5 or 6, wherein said monomers comprise N-vinyl-2-pyrrolidone.

8. The composition according to any of the claims 1 to 7, 10 wherein said solvents are represented by the esters, ketones or aromatic hydrocarbons normally used in the varnishes sector.

9. The chemical composition according to any of the 15 claims 1 a 8, wherein said photoinitiators are selected from benzophenone derivatives, ketone derivatives, methyl esters and phosphinoxides, or mixtures thereof.

10. The composition according to 9, wherein said benzophenone derivatives are 4 methylbenzophenone and 2,4,6-trimethylbenzophenone, said ketone derivatives are 1-hydroxy-cyclohexyl-phenyl-ketone, 2,2-dimethoxy-1,2-diphenylethan-1-one, 2-hydroxy-2-methyl-1-phenyl-propan-1-one, said methyl esters are the methyl esters of phenyl glyoxylic acid and said phosphinoxides are 2,4,6-trimethylbenzoyl-diphenyl-phosphine oxide.

11. The composition according to any of the claims 1 to 25 10, also comprising additives in quantities from 0% to

10%, preferably from 0.1% to 3%.

12. The composition according to claim 11, wherein said additives are antioxidants, protectives against solar radiation or products which confer hydro-repellance.

5 13. The composition according to claim 12, wherein said antioxidants are IRGANOX 1010, said protectives are TINUVIN 400, said products conferring hydro-repellance are BYK UV 3500.

10 14. A method for the preparation of the chemical composition according to any of the claims 1 to 13, comprising the following sequential stages of:

a) preparing a solution comprising at least one resin and a suitable solvent or monomer according to any of the claims from 1 to 4 and 8;

15 b) stirring the solution slowly for a time comprised of between 1' and 20' at a temperature comprised of between 58°C and 70°C;

c) adding at least one photoinitiator, according to any of the claims 1, 2, 9 and 10, to the solution following 20 solubilisation in a suitable solvent;

d) mixing for a time comprised of between 5 and 20 minutes so as to obtain a homogenous solution and taking care to keep the solution protected from exposure to solar or artificial light.

25 15. The method according to claim 14, wherein stage a) is

prepared with a solution comprising from 10 to 60 parts of resin and from 40 to 90 parts of solvents or monomers, in stage c) the photoinitiators previously solubilised in solvents at 40 - 60%, are added to the solution in a 5 percentage of 1 - 6%.

**16.** A polymerisation procedure for the chemical composition according to any of the claims 1 to 13, comprising the following sequential stages of:

- laying an appropriate amount onto a substrate to be 10 treated with the composition according to any of the claims 1 to 13;
- applying UV-A, UV-B or UV-C irradiation for a time comprised of between 2 seconds and 15 minutes.

**17.** The procedure according to claim 16, wherein the 15 application of UV-A irradiation is carried out with lamps which emit radiation between 280 and 450 nm.

**18.** The procedure according to claim 17, wherein said lamps are of a fluorescence or metallic iodide type.

**19.** The procedure according to claim 17, wherein when UV-20 B and UV-C emitting lamps are used, these are equipped with special filters for the neutralisation of the B and C type radiation.

**20.** The procedure according to any of the claims 16 to 19, wherein when lamps fixed onto a suitable support are 25 used, the power outputs of said lamps are comprised of

between 100W and 5KW.

21. The procedure according to any of the claims 16 to 19, wherein multi-lamp systems with variable power outputs from 200W up to 5KW per lamp unit are used, also 5 using more units.

22. The procedure according to any of the claims 16 to 19, wherein the power output of the lamps varies from 0.1W/cm<sup>2</sup> to 20W/cm<sup>2</sup>.

23. The procedure according to any of the claims 16 to 10 19, wherein UV emitting lamps are mounted onto robotised rigs which are able to irradiate complex profile surfaces in a homogeneous manner by carrying out a scan of the surface to be irradiated with a scanning speed directly proportional to the power output of the UV system used.

15 24. The procedure according to claim 23, wherein the lamps used have variable power outputs of between 2.5KW to 25KW.

25. The treatment method for bodywork or parts of the bodywork of vehicles, comprising the following sequential 20 stages of:

i) providing a polymerisable chemical composition according to any of the claims 1 to 13;

ii) applying a layer of said chemical composition onto the surfaces to be treated;

25 iii) leaving the solvent contained in said layer of said

chemical composition to evaporate;

iv) irradiating said layer with a UV radiation lamp for a sufficient time so as to substantially obtain the complete polymerisation thereof.

5 26. The method according to claim 25, wherein stage ii) is carried out through the depositing in the form of a film previously diluted with an appropriate solvent, said film having a thickness which can vary between 10 microns to 100 microns and a viscosity which can vary between 12 10 to 18 seconds in a Ford #4 cup.

27. The method according to claims 25 or 26, wherein stage iii) varies from 1 minute to 5 minutes.

28. The method according to any of the claims 25 to 27, wherein stage iv) is carried out according to the 15 polymerisation process according to any of the claims 16 to 24.

29. The method according to any of the claims 25 to 28, further comprising the following steps prior to the application of the polymerisable chemical composition:

20 - reshaping or replacing the damaged parts of the bodywork;

-filling and sanding the surface of said damaged part;

-applying one or more primers onto said surface and the relevant polymerisation;

25 -preparing said surface for the application of "base

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coat" using abrasive papers;  
-applying the "base coat".

30. The method according to any of the claims 25 to 29,  
further comprising a final stage consisting of finishing.

5 31. The use of a transparent, polymerisable chemical  
composition according to any of the claims 1 to 13 for  
the treatment of bodywork or parts of the bodywork of  
vehicles.

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